Longitudinal TEP Size Stability

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ABSTRACT

Speech rehabilitation with a TEP after laryngectomy has evolved since it was first introduced by Singer & Blom in 1980. Prosthesis design has improved to permit longer wear. Correct prosthesis size is critical to maintaining stable fistula patency, optimal speech quality, and prevention of aspiration. Correct sizing is essential to maintain stability over time and determine factors associated with a need for change.

METHODS AND MATERIALS

Tracheo-esophageal puncture (TEP) has become the gold standard for speech rehabilitation after total laryngectomy (Singer & Blom, 1980). Initial prosthesis fitting is known to change in the first one to two months after TEP related to the overall healing process (Wang et al., 1991). After the initial adjustment phase, size is often stable. This study investigated size stability and potential factors that influence size stability over time.

RESULTS

Table 1. Prosthesis size: Stable vs. Unstable.

<table>
<thead>
<tr>
<th>Subject 1</th>
<th>Subject 2</th>
<th>Subject 3</th>
<th>Subject 4</th>
<th>Subject 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age at TEP</td>
<td>79</td>
<td>70</td>
<td>79</td>
<td>79</td>
</tr>
<tr>
<td>Gender</td>
<td>M</td>
<td>F</td>
<td>F</td>
<td>F</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>Hispanic</td>
<td>Hispanic</td>
<td>Hispanic</td>
<td>African-American</td>
</tr>
<tr>
<td>Timing of Laryngectomy</td>
<td>Salivary</td>
<td>Primary</td>
<td>Primary</td>
<td>Primary</td>
</tr>
<tr>
<td>Extent of Reconstruction</td>
<td>TL &amp; ND</td>
<td>TL &amp; ND</td>
<td>TL &amp; ND</td>
<td>TL &amp; ND</td>
</tr>
<tr>
<td>Radiation Therapy</td>
<td>Pre-TL</td>
<td>Post-TL</td>
<td>Post-TL</td>
<td>Post-TL</td>
</tr>
<tr>
<td>Chemotherapy</td>
<td>Pre-TL</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Stoma Vent</td>
<td>Never</td>
<td>Never</td>
<td>Occasionally</td>
<td>Never</td>
</tr>
<tr>
<td>Prosthesis Size</td>
<td>16 Fr. 8 mm</td>
<td>16 Fr. 14 mm</td>
<td>20 Fr. 6 mm</td>
<td>20 Fr. 10 mm</td>
</tr>
<tr>
<td>Inhaling</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

**Stable Size (n=45)**

- Age at TEP: 79 (69-89)
- Gender: M
- Ethnicity: Hispanic
- Timing of Laryngectomy: Salivary
- Extent of Reconstruction: TL & ND
- Radiation Therapy: Pre-TL
- Chemotherapy: Pre-TL
- Stoma Vent: Never
- Prosthesis Size: 16 Fr. 8 mm
- Inhaling: No

**Unstable Size (n=45)**

- Age at TEP: 64 (40-86)
- Gender: F
- Ethnicity: Hispanic
- Timing of Laryngectomy: Salivary
- Extent of Reconstruction: TL & ND
- Radiation Therapy: Post-TL
- Chemotherapy: None
- Stoma Vent: Never
- Prosthesis Size: 16 Fr. 8 mm
- Inhaling: Yes

**All Subjects (n=90)**

- Age at TEP: 64.7 (43-86)
- Gender: M
- Ethnicity: Hispanic
- Timing of Laryngectomy: Salivary
- Extent of Reconstruction: TL & ND
- Radiation Therapy: Post-TL
- Chemotherapy: None
- Stoma Vent: Never
- Prosthesis Size: 16 Fr. 8 mm
- Inhaling: Yes

**Gender is only variable to reach statistical significance (Fisher’s Exact Test; P = 0.035) indicating females are more likely to experience change in prosthesis size stability over time.**

**DISCUSSION**

90% of laryngectomized patients with a TEP required a change in the size of their voice prosthesis beyond the first three months of expected healing. Correct sizing is critical to maintaining stable fistula patency, optimal speech quality, and prevention of aspiration. The purpose of this study was to investigate prosthesis size stability over time and determine which factors influence this instability.

**CONCLUSIONS**

- Gender was the only statistically significant factor to differentiate stable vs. unstable patients with females being more likely to have a stable size.
- ‘Need for size change” did not follow a consistent pattern over the 3 year study period and beyond.

REFERENCES


CONTACT

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